JAPANESE MEDICAL EQUIPMENT

KIT, WATER DETECTOR, FIELD, FOR POISONED WATER

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MEDICAL ANALYSIS SECTION
5250th Technical Intelligence Company
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Kit, Water Detector, Field, for Poisoned Water

SOURCE: Tokyo, Japan.

IMPORTANCE: Not previously reported. A new item in the experimental stage, not yet issued to Japanese field units.

DESCRIPTION: This kit is contained in a hinged metal box, 7 1/4" x 7 1/4" x 3", with a canvas sling strap. The box is carried in a canvas-leather carrying case with a leather buckle strap. The metal box bears a Japanese inscription which is interpreted as "Poison Detector".

The top of the box when open has a folding test tube rack for 6 tubes with a white background for reading color reactions.

The bottom of the open metal box has compartments for the following items:

1.	Test tube, with cork	ea	6
2.	Vial, plastic, for chemicals	ea	22
3.	Cases, metal, small, for chemicals	ea	6
4.	Bottle, water sample, with clamp	ea	1
5.	Syringe, glass, 10 cc	ea	1
6.	Spoon, bamboo, large	ea	1
7.	Spoon, bamboo, small	ea	1
8.	Forceps, bamboo, plain, small	ea	1

COMMENT: This item is of intelligence value in that it is a compact field testing unit for determining evidence of poison in water or forage. It is a new item in the Japanese Army and as far as is known was never issued or used in the field but was still in the experimental stage.

It is interesting to note that a test for the presence of Saponins was included in this experimental kit. It is possible that the Japanese had contemplated using these blood-destroying glucosides as a method of contaminating water supplies. It is more probable that the Saponin detector was included because of the prevalance of Saponin containing plants in the Orient and the danger of natural contamination.

Unfortunately, the actual chemicals used in this kit are unknown to this section at the time of this report.

A literal translation of all information available is included with this report.

LITERAL TRANSLATION OF THE PAMPHLET
ACCOMPANYING THE POISON WATER DETECTOR

"The direction for using the water detector"

The contents of the water detector.

Chemicals for:	Corrosive sublimate
	Cyanic acid
	Alkaloid
	Arsenic
	Supply
Test tubes	4 each
Bamboo spoons	2 "
Bamboo pinset	2 "
Test tube for arsenic	1 set

How to use.

1. The method of detecting poison in drinking water.

1. Corrosive sublimate (Mercury Bichloride).

a. Put each one detecting paper for corrosive sublimate into a test tube, pour the water to be detected in it to the same height as the detecting papers (the explanation for this operation will be omitted hereafter) and shake it lightly. In the case that the color of the solution or the detecting paper changes to purple, the water is not suitable to drinking.

2. Cyanic acid

a. Put a detecting paper with the water into a test tube and shake it, then put a paper #2 in it, shake it, and at last put a paper #3, shake it. If the color of the solution is changed to purple or red, the water is unsuitable to drinking. Being colorless it is harmless. If it's color becomes deep red it is doubtful whether the cyanic acid exists or not.

In this case, put a special paper #1 into another test tube, pour the water in it, then put one more paper #2 in it, and shake it. If the color of the solution is changed to deep orange, beware of cyanic acid.

3. Alkaloid

a. Put a paper for alkaloid into a test tube, pour the water to be detected in it, shake it lightly, next shake it after adding a small quantity of the powder reagent #3 to it, add once more 1/3 of the powder reagent to it, andshake it. If the color of the solution changes to pink or white, it is unsuitable to

drinking. A yellow color proves it is harmless.

4. Arsenic

a. Put a paper for arsenic into the round tube, put one spoon of each powder reagent for arsenic (1) & (2) into test tube. Put the lid down as soon as its water is put in it to the height of 1/3 of the test tube, and shake it lightly. If the lower edge of the paper or the upper edge of the portion which color changed to yellow brown presents yellow color, the water is not suitable to drinking.

We have described four kinds of the poison as above. In the case that two kinds are mixed in the same water the respective process must be used for their detection one by one. But in the case that corrosive sublimate is existing with cyanic acid there may happen that either corrosive sublimate or cyanic acid presents its reaction or neither presents.

II The method of detecting the poison out of forage.

a. The method of detecting the poison out of forage is as follows. In addition to the forage - about 100g or about 4 grasps, in about 200 g of water - or 3 times by both palms is poured in the suitable receptacle. The water should be certified it's having no poison (water tested before testing forage). Allow to stand for about 5 minutes as it is but it must be shaken several times. The solution can be detected in thesame way as the water detection. But in case of detecting corrosion sublimate in the Kaoliang (Corn-like product of Manchuria used for forage) put few papers for corrosive sublimate then do as the water detection. As the Kaoliang presents the reaction resembled to the alkaloid materials we must be careful.

Chemical Arms (Chemical Warfare)

1. The detection of the poison under water.

a. The detection of No. 1 Yellow.

1. Put the water to be detected - 4mm^{3}in a test tube with the detecting paper, and shake it lightly to be brown solution. In large quantity, it produces brown precipitate. Many mistake the isolated fibre of test paper for brown precipitate produced by shaking. In small quantity it becomes brown turbid. As this turbidity cannot be easily observed, the same operation must be resumed with distilled water or purified water to judge it. (Use distilled water as a control)

b. The detection of arsenic.

Put the water to be detected - about 4 mm^{3}into a test tube put the detecting tube - B. brown tube after both edges were cut off. Shake it thoroughly and observe it.

Reaction produces white precipitate in case of large quantity, while in small quantity it becomes white turbid solution.

c. The detection of infusion.

At first the detection of arsenic will be described. The detection of arsenic is now prevailing because it is most necessary and sure method which can detect without being interrupted by No. I Yellow existing together. Contrary to this, the detection of No. 1 Yellow is interrupted by No. 2 Yellow which exists together in proportion to quantity of it.

Commonly, as soon as a test paper is put in the reagent it will become black colored simultaneously and the solution will become brown.

But in proportion of quantity of No. 2 Yellow, its color will gradually fade to be at last colorless and transparent. There happens sometimes that even the test paper becomes white colored. In this case we must do this operation after it was dilute by distilled water or purified water.

II. The detection of the poison in materials

a. The detection of No. 1 Yellow.

Extract the poison in a test tube by using a solvent and a funnel, put about 4 mm^3 of the extracted solution in a test tube, cut off the both edges of the detecting tube - A. colorless tube. put it into the solution, shake it thoroughly, and observe if the reaction proves red purple.

NOTICE: As the reagent in the detecting tube - A. comparatively much influenced by temperature we must be careful to heat while in the cold season, it must be heated.

In the case that large quantity of No. 1 Yellow exists only one detecting tube don't show any reaction (red purple) so it must be dilute by distilled water or purified water or another detecting tube must be added to it.

Notice on the operation:

1. Though it is required that the quantity of the carbon tetrachloride used for extracting the poison should be modified in proportion to the quantity of the poison, we should use small quantity as possible.

2. The test tube used in the detecting operation must be carefully dried. If any test tube with drops of water is used, it will become the same red purple as in No. 1 Yellow. We must be careful.

b. The detection of arsenic.

Put a detecting tube - C. (blue tube) which both edges were cut off in the test tube with the extracted solution - 4 cm^3 and shake it. It will become red purple.

If No. 2 Yellow exists too much it showsno color. In this case it must be diluted with the distilled water or the purified water, otherwise another detecting tube must be added to it.

c. The detection of mixture.

The detection of mixture, at first, must be done for it is more determinative and exact than any other detection. We can detect it by only one detecting tube - C. without being influenced by any quantity of No. 1 Yellow exists together. In case of much poison the distilled water or thepurified water will be required, otherwise another detecting tube.

It may happen that a detecting tube - A. shows red purple as if No. 1 Yellow existed. This is not because of the degeneration of the reagent, but because of the quantity of No. 2 Yellow.

As it is difficult to detect No. 1 Yellow out of water or material, it requires some skill to do it

III. The detection of gas by using test paper.

a. Test paper D.

If we let a test paper (D) touch the Phosgen gas we can see it changed its color to yellow or orange, but the colors differ in proportion to the density.

b. Detecting plate.

Its color will become red so soon as it touches any drop of No. 1 Yellow solution. In No. 2 Yellow it will become blue.

SAPONIN (A group of glucosides which dissolve red blood cells even in high dilutions)

Put a spoon of the powder reagent for Soponin - #1 and the water to be detected into the test tube. Next put one fourth spoon of the #2 and once more shake it and allow to stand it for a while as it is. If it shows the blue or purple color around the precipitate we can judge it contains Saponin. If its color becomes white, it is harmless.

Statement of Engineer Fujiwara after examining this kit

The #1 & #2 being the reagents for Saponin you ought to explain the method of using them if you intend to insert them among the other reagents. We need not have any test tube for arsenic but the tube - No. 1 & No. 2, but it is desirable to have one more set as a spare tube.

Respecting the test for cyanic acid, it is needless to have No. 4 besides No. 1, No. 2, No. 3, Special No. 1, and Special No. 2. I conceive all the reagent bottles should be about two mm higher in comparison with the height of the test paper. I have described as the above mentioned only for reference purpose.

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PHOTOGRAPHS:

Fig. 1:

Carrying case and kit.

Fig. 2:

Kit open.

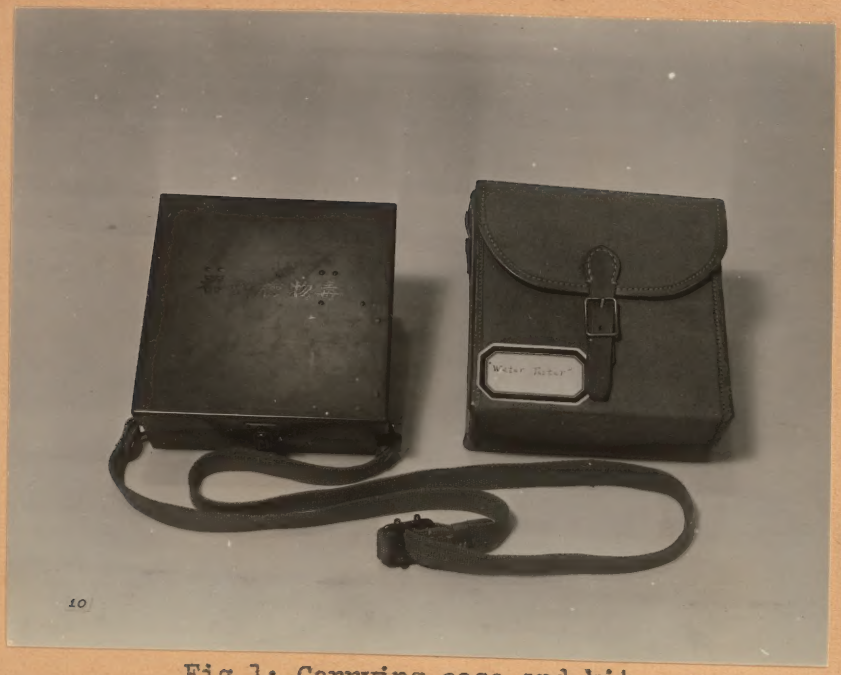

Fig 1: Carrying case and kit.

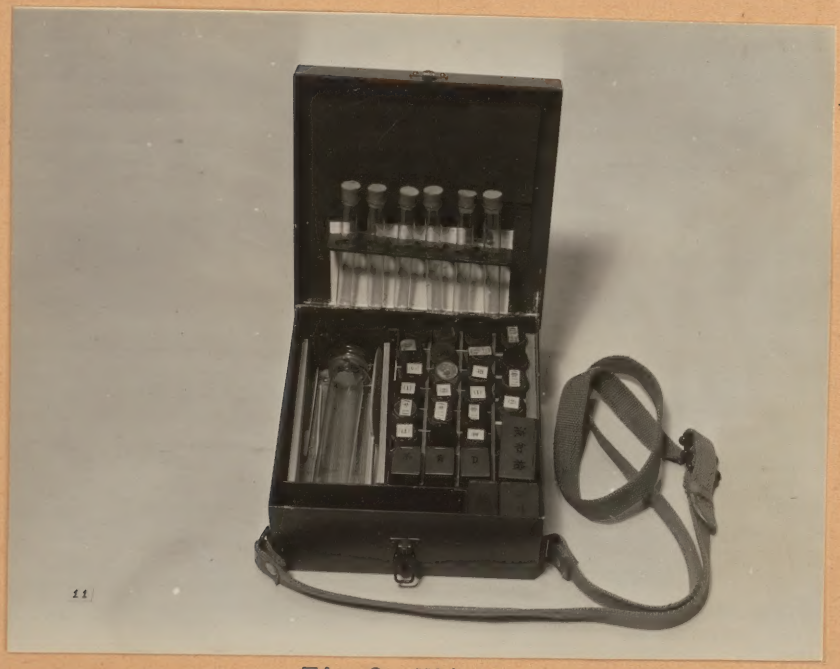

Fig 2: Kit open.